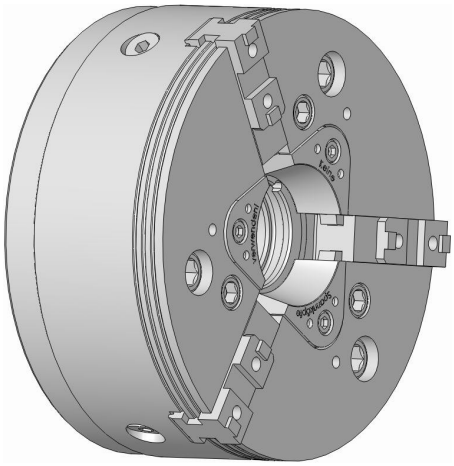
HAINBUCH
SPANNENDE TECHNIK



# Installation manual

Jaw chuck B-Top3

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**»Translation of original installation manual«**

# 1 General

## 1.1 Information about this manual

This manual enables safe and efficient handling of the clamping device.

The manual is a component of the clamping device and must be kept in the immediate vicinity of the clamping device where it is accessible for personnel at all times. Personnel must have carefully read and understood this manual prior to starting all tasks. The basic prerequisite for safe work is compliance with all the safety instructions and handling instructions in this manual.

Illustrations in this manual are provided for a basic understanding and may deviate from the actual model of the clamping device.

Usual approaches like e.g. cleaning of the areas for screwing are presupposed to be known.

## 1.2 Explanation of symbols

**Safety instructions**

Safety instructions are indicated by symbols in this operating manual. The safety instructions are introduced by signal words that express the scope of the hazard.

The safety instructions must be strictly adhered to, you must act prudently to prevent accidents, personal injury, and material damage.

**DANGER!**

… indicates an imminent dangerous situation than can result in death or serious injury if it is not avoided.

**WARNING!**

… indicates a possible dangerous situation that can result in death or serious injury if it is not avoided.

**CAUTION!**

… indicates a possible dangerous situation that can result in minor or light injury if it es not avoided.

**NOTE!**

… indicates a possible dangerous situation that can result in material damage if it is not avoided.

**Tips and recommendations**

… indicates useful tips and recommendations, as well as information for efficient and trouble-free operation.

## 1.3 Limitations of liability

All information and instructions in this operating manual have been provided under due consideration of applicable standards and regulations, the current state of technology, as well as our many years of experience.

The manufacturer assumes no liability for damage due to:

- Failure to follow the instructions in the manual
- Non-intended use
- Deployment of untrained personnel
- Unauthorized conversions
- Technical changes
- Use of non-approved spare parts

The actual scope of delivery can vary from the explanations and graphic representations provided in this manual in the case of special versions, if supplemental order options are desired, or on the basis of the latest technical changes.

The agreed obligations in the delivery contract, the general terms and conditions, as well as delivery conditions of the manufacturer, and the statutory regulations valid at the time the contract was concluded, apply.

## 1.4 Max. RPM

Of all indicated numbers of RPMs of all used groups the **lowest given RPM** is to be used always!

## 1.5 Copyright

This manual is protected by copyright and is provided exclusively for internal purposes.

Delivery of the operating manual to third parties, duplication in any form – including excerpts – as well as exploitation and/or communication of the content, are not permitted [except for internal use] without written approval from the manufacturer.

Actions to the contrary make damage compensation mandatory. We reserve the right to enforce additional claims.

## 1.6 Scope of delivery

All tools and accessories that are not included in the scope of delivery are marked as optional.

In scope of delivery of the clamping device:

- 1 Jaw chuck
- 1 Guard bushing
- 1 set Master jaws
- 1 set Test jaws
- 1 Chuck wrench

Optionally the scope of delivery of the clamping device includes:

- Jaws
- Insert bushing
- Eye bolts

## 1.7 Spare parts

**WARNING!**

**Safety risk if the wrong spare parts are used!**

Incorrect or defective sare parts can cause damage, malfunction, or total failure; they can also impair safety.

- Only use manufacturer's original spare parts.

Only purchase spare parts from authorized dealers or direct from the manufacturer. Addresses are in the appendix.

## 1.8 Warranty terms

The warranty terms are included in the manufacturer's terms and conditions.

## 1.9 Clamping force

The specified maximum radial clamping force can vary due to lubrication status and the degree of contamination.

**CAUTION!**

**Damages due to excessive draw and compressive force!**

An excessive draw force and/or compressive force may damage the clamping device.

- The max. draw force and compressive force may not be exceeded.

## 1.10 Screws

### Moving parts

**WARNING!**

**Danger of injury due to screws and stud screws being accelerated out of the device!!**

Screws and stud screws radially attached to the clamping device can be accelerated out of the device and cause severe injuries.

- After assembly and maintenance tasks. Always retighten all bolts and stud bolts radially attached on the clamping device with the prescribed tightening torque.
- All screws or stud screws that are not marked with a tightening torque specification are tightened with the prescribed tightening torque in the factory and should only be unscrewed after consultation with the manufacturer.

The tightening torque is shown in the assembly drawing of the clamping device or it is engraved on the device itself in the direct vicinity of the screw or stud screw.

# 2 Safety

This section provides an overview o fall the important safety aspects for optimal protection of personnel, as well es for safe and trouble-free operation.

## 2.1 Responsibility of the customer

The device is used in industrial applications. Consequently the owner of the device is subject to legal industrial safety obligations.

In addition to the safety instruction in this manual, generally valid safety and accident protection guidelines, and environmental protection guidelines must be adhered to and complied with for the area of implementation of the device.

## 2.2 Personnel requirements

**WARNING!**

**Danger of injury due to insufficient qualification!**

Improper handling of the clamping device can cause serious injury or material damage.

- Only have activities performed by personnel who are qualified to perform these activities.

The following qualifications are cited in the operating manual for the various activity areas.

- Specialized personnel
  are personnel who due to their specialized training, skills, and experience, as well as knowledge of the applicable regulations, are capable of executing the tasks assigned to them and of recognizing and avoiding possible hazards on their own.
- Hydraulic specialist
  The hydraulic specialist has been trained for the particular task area in which he is active and is familiar with the relevant standards and regulations.

Due to his specialized training and experience the hydraulic specialist can perform tasks on hydraulic equipment and recognize and avoid possible dangers on his own.

- **Electric specialist**
  The electric specialist has been trained for the particular task area in which he is active and is familiar with the relevant standards and regulations.
  Due to his specialized training and experience the electric specialist can perform tasks on electric equipment and recognize and avoid possible dangers on his own.

Only persons from whom it can be expected that they reliably execute their work are considered as personnel. Persons whose capability to react is impaired, for instance through drugs, alcohol, or medication, are not approved.

- Comply with age-specific and job-specific regulations that are applicable at the installation site when selecting personnel.

## 2.3 Intended use

The clamping device is designed for installation in a machine tool. Within the machine tool the clamping device is designed exclusively as a through-bore chuck for bar work and as an end-stop chuck for chuck work.
The clamping device should only be mounted, operated, maintained, and cleaned by instructed, specialized personnel.

Intended use also includes compliance with all the instructions in this manual.

Any use that extends beyond the intended use, or any other use of the clamping device is considered to be misuse and can cause dangerous situations.

**WARNING!**

**Danger due to misuse!**

Misuse of the clamping device can cause dangerous situations.

Particularly refrain from the following uses of the clamping device:

- Use in machines other than machine tools.
- Use in machine tools with technical data other than that specified on the clamping device.

Claims of any type due to damage arising from non-intended use are excluded.

## 2.4 Personal protective equipment

Wearing of personal protective equipment is required to minimize health hazards when working with the device.

- Always wear the protective equipment necessary for the respective task when working with the device.
- Follow the instructions that have been posted in the work area.

**Always wear**

For all tasks always wear:

**Protective work clothing**

is tight-fitting work clothing with low resistance to tearing, with tight sleeves, and without projecting parts. It is primarily used to protect against entanglement by moving machine parts.

Do not wear rings, chains, or other jewelry.

**Safety footwear**

for protection against heavy falling parts and slipping on slippery substrates.

**For special tasks wear**

Special protective equipment is required when executing special tasks. Separate reference is made to this equipment in the specific sections of this manual. This special protective equipment is explained below:

**Hard hat**

to protect against falling and flying parts and materials.

**Protective goggles**

to protect eyes from flying parts and liquid splashes.

**Protective gloves**

to protect hands from friction, abrasion, puncture wounds, or deeper injuries, as well as from contact with hot surfaces.

## 2.5 Special dangers

In the following section residual risks are cited that occur due to installation of the clamping device in a machine tool. In each case the residual risks that have been determined based on a risk analysis of the machine must be specified by the customer.

- Follow the safety instructions listed here and the warnings in the other sections of this manual to reduce health hazards and to avoid dangerous situations.

## Suspended loads

**WARNING!**

**Life-threatening danger due to suspended loads!**

Some clamping devices must be lifted with a crane. When lifting the clamping device there is a life-threatening hazard due to falling parts or parts swinging out of control.

- Never step under suspended loads.
- Comply with the instructions concerning the intended attachment points. Ensure that the sling gear is securely seated!
- Do not attach lifting gear in projecting components.
- Only use approved hoists and sling gear with sufficient bearing capacity.
- Do not use rope and belts that are torn or frayed.

## Moving parts

**WARNING!**

**Danger of injury due to moving parts!**

Rotating parts of the clamping device can cause serious injuries.

- Do not reach into moving parts or handle moving parts during operation.
- Do not open covers when the device is in operation.
- Be aware of afterrun time:
  Prior to opening the covers ensure that all parts have come to a standstill.
- Wear tight-fitting protective work clothing in the danger zone.

### Wrong clamping of the work piece

**WARNING!**

**Danger of injury due to incorrect clamping of the work piece!**

Incorrect work piece clamping may lead to the ejection of the work piece and result in serious injuries.

Too low supply pressure can lead to the reduction of clamping force!

Too high supply pressure can lead to damage of the components of the clamping device!

- Check and adjust, if necessary, the supply pressure regularly.
- Do random checks of the unmachined work pieces on dimensional accuracy.

### Missing changing parts

**WARNING!**

**Danger of injury due to missing changing parts!**

When operating the clamping device without changing parts [segmented clamping bushing, clamping heads, work piece end-stops] there is a higher danger of crushing injuries due to the stroke of movable components of the clamping device.

- The clamping process may not be initiated without assembled segmented clamping bushing and/or work piece end-stop.

## 2.6 Environmental protection

**NOTE!**

**Environmental hazard due to incorrect handling!**

Incorrect handling of environmentally hazardous substances, particularly improper disposal, can cause significant environmental damage.

- Always comply with the instructions cited below
- If environmentally harmful substances should inadvertently get into the environment, initiate suitable measures immediately. If in doubt notify the responsible municipal authority about the damage.

The following environmentally harmful substances are used:

**Lubricants**

Lubricants like greases and oils can contain toxic substances. Ensure that they do not get into the environment.

The device must be disposed of by a specialized disposal company.

To achieve trouble-free operational performance of the clamping device only use HAINBUCH lubricants. See the appendix for reference addresses.

# 3 Technical data

## 3.1 General information

The clamping device is available in different sizes and variants.

Information about e.g.

- dimensions
- weight

you will find on the corresponding drawing.

## 3.2 Operating conditions

| Environment | Specification | Value | Unit |
|---|---|---|---|
| | Temperature range | 15 - 65 | °C |

## 3.3 Power specifications

**NOTE!**

**Material damage if the power specifications do not agree!**

If the power specifications of clamping device and machine do not agree, severe damage extending to total damage can occur to the clamping device and machine.

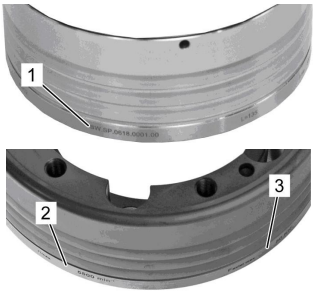
- Only install clamping devices in machines with the same power specifications.

Information on maximum clamping force and drawtube force is provided on the clamping device.

## 3.4 Dimensional sheet

Dimension sheets for the respective clamping device can be requested from HAINBUCH.

## 3.5 Type designation




The type designation is on the clamping device and includes the following information:

1 ID no. [marked with the # symbol]
2 Maximum speed [rpm]
3 Maximum clamping force [kN]

Fig. 1

# 4 Structure and function

## 4.1 Overview and brief description

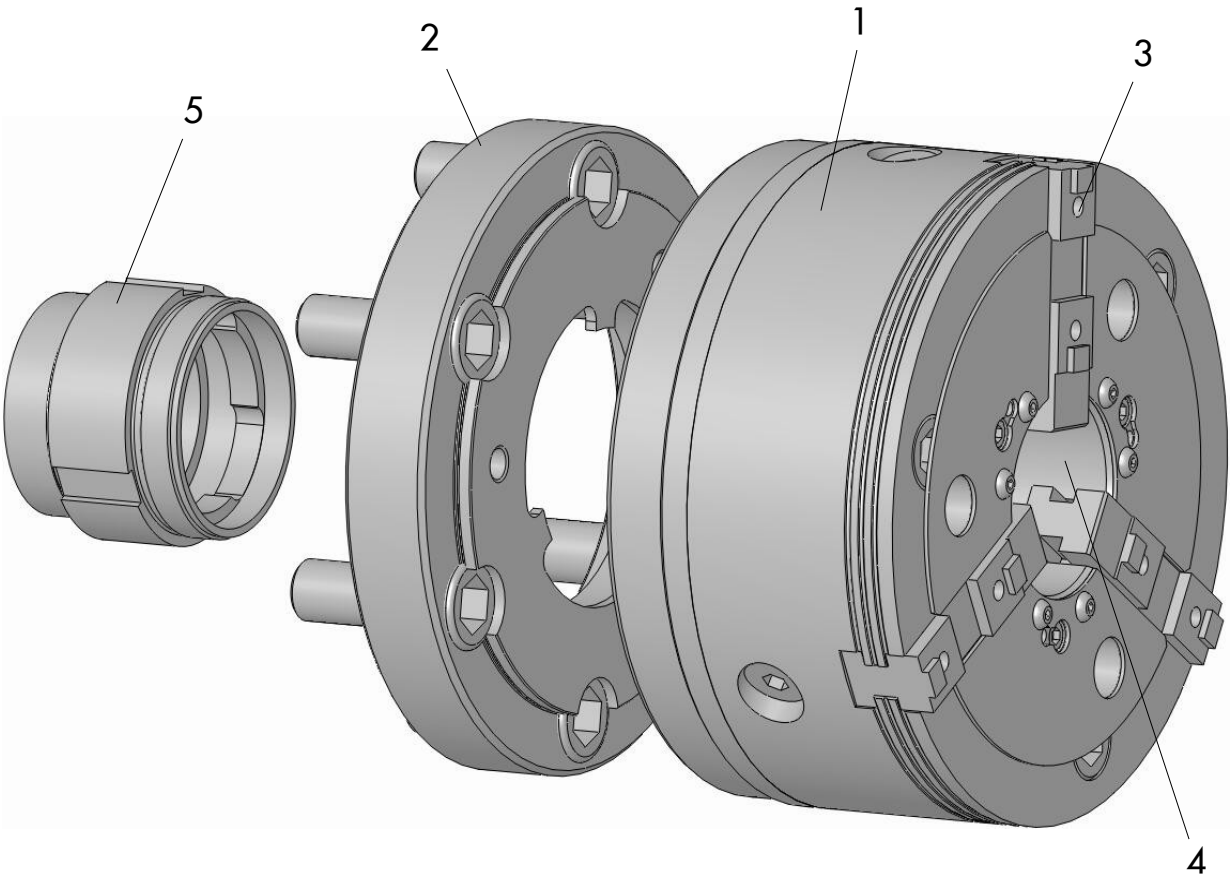



Fig. 2

1. Jaw chuck
2. Flange
3. Master jaws
4. Insert bushing
5. Bayonet adapter

**Brief description**

The jaw chuck B-Top3 is designed for maximum flexibility in production. Thus, this chuck is characterized by a quick-change jaw with high repeatability. Through the wedge bar system, a high efficiency, high operating reliability and short setup time is achieved.

In combination with various optional (top) jaws and insert bushings the clamping device can be easily adapted to your requirements.

The jaw chuck B-Top3 can – like a modular system – be easily converted to a full inner clamping (segmented clamping bushing) or a full outer clamping (clamping head) without removing the chuck.

## 4.2 Optional accessories

The accessories described here are not included in the scope of delivery.

Specially developed segmented clamping bushings match to the respective maximum RPM are available for each clamping device. Trouble-free and precise function of HAINBUCH clamping devices is only ensured when using original HAINBUCH segmented clamping bushings.

Lubricating grease and grease gun are required for cleaning and preservation of the clamping device. The lubricating grease is also specially matched for protection of the vulcanized segments of the segmented clamping bushings and increase their service life and elasticity by a significant factor.

### 4.2.1 Spindle flange

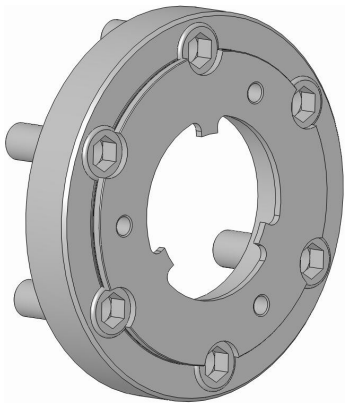


Fig. 3

The spindle flange serves for adaption of the segmented mandrel to the machine.

Depending on the order the spindle flange can be included in the delivery or provided by the customer.

### 4.2.2 Jaws

For all purposes, the clamping device can be modified with various jaws. You have the choice:

- Base jaws
- Top jaws
  - hard
  - soft
  - aluminum
- Claw jaws, hard
- Profiled stepped jaws

### 4.2.3 Insert jaws

Fig. 4

The insert bushings changeable from the front side allow an ease work piece adjustment – just as you need it:

- closed
- with ejector
- with passage
- with spray nozzle
- with adjustable end-stop

### 4.2.4 Add on clamping elements

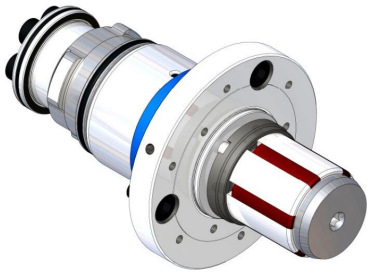


Fig. 5

- Segmented mandrel MANDO Adapt T211
  - The CENTREX quick change-over interface allows a µ-precise clamping of the add on clamping elements to the jaw chuck B-Top3 without adjusting.
  - Possible clamping range Ø 20 - 80 mm by four sizes of the segmented mandrel
  - Vibration damping by vulcanized segmented clamping bushings
  - Work piece stabilization by axial traction against the workpiece stop
  - Large bridging area by vulcanized clamping elements

The MANDO Adapt can be ordered from HAINBUCH.

Fig. 6

- Chuck SPANNTOP Adapt
  - the CENTREX quick change-over interface allows a µ-precise clamping of the add on clamping elements to the jaw chuck B-Top3 without adjusting.
  - Possible clamping range Ø 4 - 100 mm
  - Parallel and circumferential clamping
  - Work piece stabilization by axial traction against the workpiece stop
  - high stiffness and low wear

The SPANNTOP Adapt can be ordered from HAINBUCH.

### 4.2.5 Grease

Fig. 7

The universal grease for chuck and mandrel lubrication is supplied in a 1000g can. The order number for the universal grease is 2085/0003; it can be ordered from HAINBUCH.

### 4.2.6 Grease gun

Fig. 8

The grease gun is filled with universal grease, which is pressed into the clamping device. The grease gun has a pointed mouthpiece. The order number for the grease gun is 2086/0004; it can be ordered from HAINBUCH.

# 5 Transporting, packaging and storing

## 5.1 Safety instructions for transporting

**Unbalanced package**

**WARNING!**

**Danger of falling due to an unbalanced package**

Packed goods can have an unbalanced package. If attached incorrectly the package can tip and cause life-threatening injuries.

- Note the markings on the packages.
- Attach the crane hook in such a manner that it is located above the center of gravity.
- Carefully lift and see if the load tilts. If necessary change the attachment.

## 5.2 Symbols on the packaging

**Fragile**

Identifies packages with fragile or sensitive contents. Handle the packed goods with care; do not allow them to fall, and do not subject them to impact.

**Protect from moisture**

Keep packed goods dry and protected against moisture.

## 5.3 Transport inspection

Check delivery immediately upon receipt to ensure that delivery is complete, and to identify any transport damage.

Proceed as follows it there is apparent external damage:

- Do not accept the delivery, or only accept it with reservation.
- Note the extend of transport damage on the transport documents or on the transport company's delivery ticket.
- Submit a complaint.

Report any defect as soon as it is detected. Claims for damage compensation can only be enforced during the applicable periods for giving notice of lack of conformity.

## 5.4 Unpacking and inner-company transportation

The clamping device is packed vertically and has threaded bores in the end face.

There are also threaded holes in the circumference of the clamping device. Lifting eye bolts can be screwed into these threaded holes.

To safely lift the clamping device out of the package it must be hooked into a crane depending on the weight.

- Two people are required for this task.
- Special tools required:
  - Crane
  - Lifting eye bolts

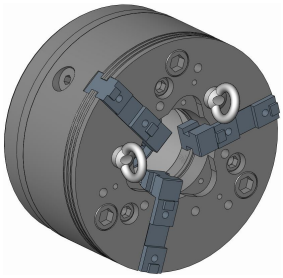


Fig. 9

1. Screw lifting eye bolt into the thread in the end face of the clamping device.
2. Hook the load-handling equipment into the lifting eye bolt.
3. Use a crane to carefully lift the clamping device out of the transport packaging and put it down on a stable, level substrate.

## 5.5 Packaging

**About the packaging**

Individual packages are packed according to the expected transport conditions. Environmentally-friendly materials have been used exclusively for the packaging.

Packaging should protect the specific components from transport damage, corrosion, and other damage until installation. Therefore do not destroy the packaging, remove it just before installation.

The packed goods are sealed in foil airtight and packed in cartons. See the »Technical Data« section for the specific weight of the respective sizes.

**Handling packaging materials**

Dispose of packaging materials in accordance with the respectively valid statutory regulations and local guidelines.

**NOTE!**

**Improper disposal causes environmental damage!**

Packaging materials are valuable raw materials and in many cases they can be reused, or they can be effectively treated and recycled.

- Dispose of packaging materials in an environmentally responsible manner.
- Comply with locally applicable disposal guidelines. If necessary commission a specialized company to dispose of packaging.

## 5.6 Storing

Under certain circumstances instructions for storage and subsequent storage are affixed to the packages that extend beyond the requirements cited here.
Comply with these instructions accordingly.

**Storage of packages**

Only store packages under the following conditions:

- Do not store outdoors.
- Store in a dry and dust-free location
- Do not expose to aggressive media
- Protect from direct sunlight
- Avoid mechanical vibration
- Storage temperature: 15 bis 35 °C
- Relative humidity: max. 60 %
- For storage periods longer than 3 months:
  - Check the general condition of all parts and the packaging at regular intervals.
  - Touch up or re-apply anti-corrosion agents as needed

**Subsequent storage of the clamping device**

Only re-store the clamping device under the following conditions:

- Thoroughly clean the clamping device prior to subsequent storage [see section »Cleaning«]
- Thoroughly oil and grease the clamping device. [see section »Cleaning«]
- Store the clamping device in airtight foil

# 6 Assembly

## 6.1 Preparations

The total weight of the clamping device, consisting of spindle flange and clamping unit, depends on the size and can be as much as 50 kg.

Depending on the weight, to safely lift the clamping device out of the package and position it in the machine it must be hooked into a crane.

**WARNING!**

**Danger of injury due to falling components!**

When mounting components can fall and cause severe injury and material damage.

- Two people are always required for this task.
- Use a crane.

## 6.2 Assembling of the clamping device

**WARNING!**

**Danger of injury due to unintentional startup of the tool spindle!**

Unexpected start up of the tool spindle can cause severe injury.

- Prior to switching on automatic mode close all protective doors or hoods that are present on the machine tool.
- Unscrew all ring nuts from the clamping device and remove them from the interior of the machine.
- Only run the machine in set-up mode or jog mode.

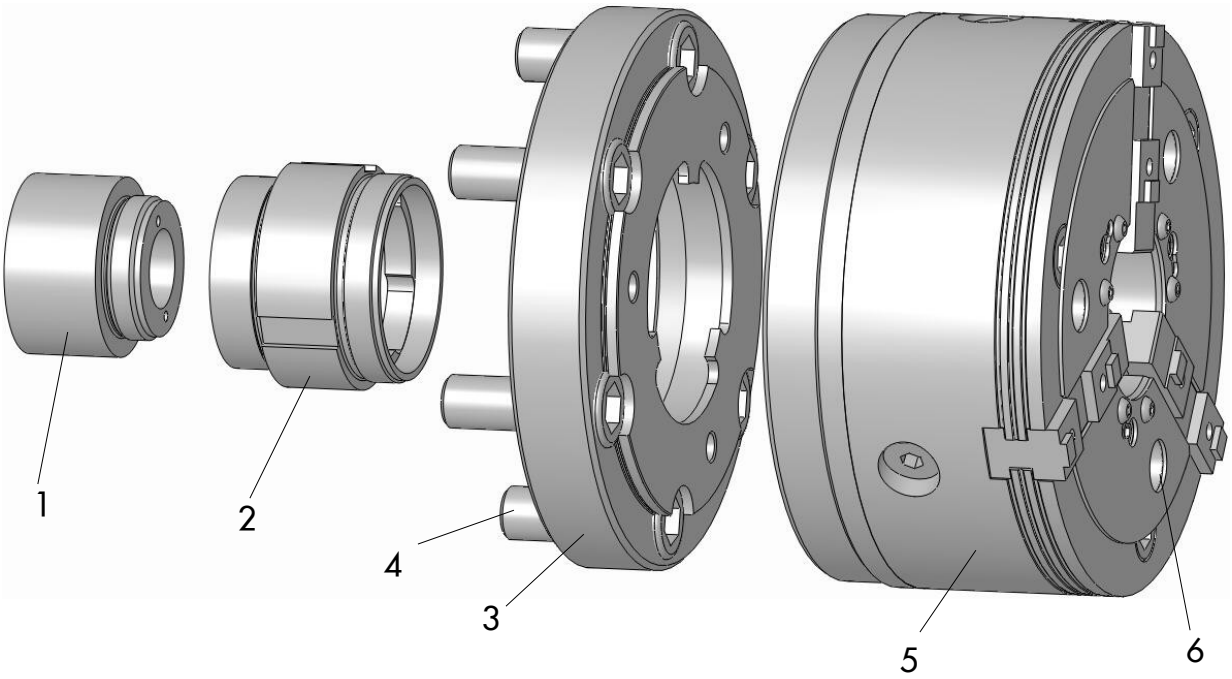



Fig. 10

### 6.2.1 Assemble the draw tube adapter [optional]

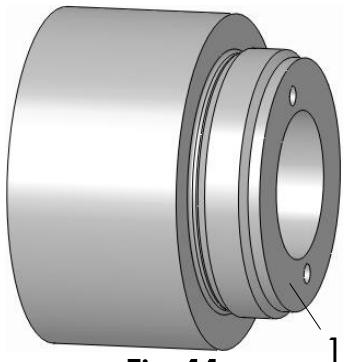



Fig. 11

1. Put the machine in set up mode.
2. Wipe off the mating surfaces of the machine spindle with a soft, lint-free cloth and remove all oil and grease residues.
3. Lift the draw tube adapter [1] on the draw tube of the machine by hand or with the aid of a crane. Screw the draw tube adapter [1] on the draw tube and tighten it only finger tight.

### 6.2.2 Assemble the bayonet adapter

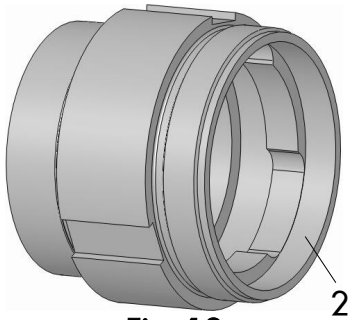



Fig. 12

1. Put the machine in set up mode.
2. Wipe off the mating surfaces of the machine spindle with a soft, lint-free cloth and remove all oil and grease residues.
3. Screw the adapter [2] on the draw tube of the machine by hand and tighten it only finger tight.

### 6.2.3 Assembling the flange [optional]

**NOTE!**

**Material damage due to wrong tightening torque of the allen screws in the spindle flange!**

The tightening torque of the allen screws is prescribed by the spindle or machine manufacturer. Incorrect tightening torque of the allen screws in the flange can cause significant material damage on the clamping device and on the machine.

- Only tighten the allen screws of the spindle with the torque prescribed by the spindle or machine manufacturer.

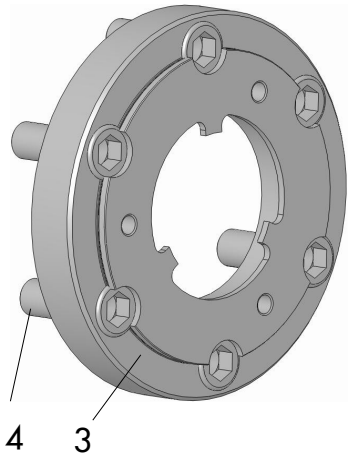



Fig. 13

1. Put the machine in set up mode.
2. Wipe off the mating surfaces of the machine spindle with a soft, lint-free cloth and remove all oil and grease residues.
3. Put the flange [3] with its 3 keys into the grooves of the adapted bayonet adapter [2].
4. Turn back the flange [3] till the bolt hole circles of flange and spindle fit.
5. Screw in the allen screws [4] and tighten them only finger-tight.
6. Check the concentricity of the spindle flange [3]. With machines with cylindrical reception the concentricity can be corrected by adjusting the flange [3].
7. Tighten the allen screws [4] firmly in a cross pattern.

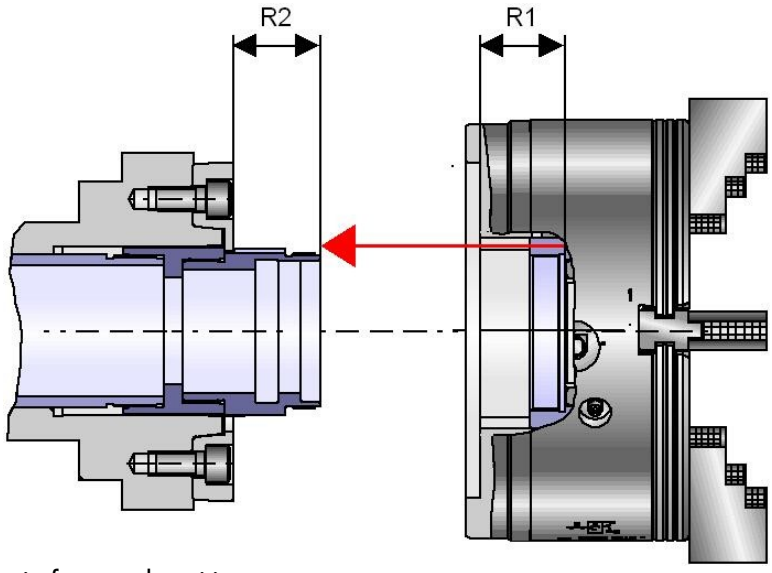
### 6.2.4 Assembly of the jaw chuck

Two people are required for this task!

Special tools required:

- Allen wrench
- Crane
- Eye bolts

1. Put the machine in set up mode.
2. Remove all tools from the interior of the machine.
3. Set the clamping pressure of the machine tool on the lowest setting.
4. Move the draw tube of the machine tool into front stop position.




R1 = Chuck piston in front end position
R2 = R1 – 0.3 mm (max. 0.5 mm)

**NOTICE!**

**Material damage due to mounting error!**

Make sure that the draw tube can be moved into front end position (release position) with assembled clamping device.

- Keep the dimensions of R1 and R2

5. Screw the clamping device by the piston thread [pos.5] on the clamping draw tube till end.

6. Turn back the clamping device till the passage hole of the chuck body fits to the threaded holes of the spindle flange.
7. Screw in the mounting screws equal and put the base jaw in the clamping device to max. outer position (see chapter »changing the jaws«).
8. Remove the guard bushing:
   Remove the screws [1], screw the into the next threads to push-off the guard bushing.
9. Move back the draw tube till the clamping device fits to the spindle flange [optional] or the machine spindle and tighten the screws again equally.

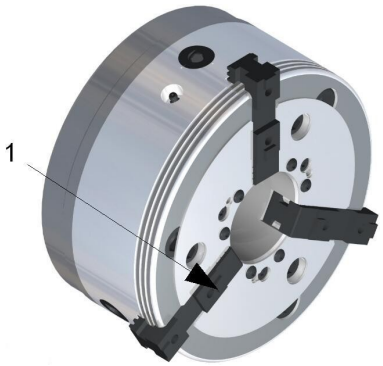


Fig. 14

**NOTICE!**

**Material damage due to eye bolts remaining in the chuck.**

By eye bolts remaining in the chuck after assembly the lathe, clamping devices and work piece can be damaged or even destroyed.

- Remove promptly the eye bolts from the chuck after assembly to the machine..

### 6.2.5 Checking and adjusting the face run and the concentricity

**NOTE!**

**Material damage due to insufficient face run and concentricity!**

Due to insufficient face run and concentricity work pieces can be damaged during processing.

- After each mounting check, and if necessary re-adjust, the face run and concentricity of the clamping device.

## Checking face run

Special tools required:

- Dial indicator
- Plastic tip hammer

1. Place the magnetic bas of the dial indicator on the inside of the machine.
2. Place the dial indicator for face run on the face of the clamping unit.
3. Use a plastic tip hammer to carefully knock the clamping unit into position.
4. Tighten the allen screws with a torque wrench in a cross pattern [see section »Screw tightening torque«].

   For exact adjustment, if necessary loosen the allen screws several turns and retighten in a cross pattern.

5. Wipe off the taper of the the segmented mandrel with a soft, lint-free cloth and remove all oil and grease residues.

## Checking concentricity

Special tools required:

- Dial indicator
- Plastic tip hammer
- Torque wrench

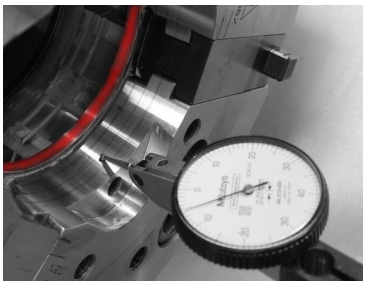


Fig. 15

1. Place the magnetic base of the dial indicator on the inside of the machine.
2. Place the dial indicator for concentricity on the clamping taper.
3. Adjust the segmented mandrel in such a manner that the dial indicator shows the value »0«.

   For exact adjustment, if necessary loosen the allen screws several turns and retighten in a cross pattern.

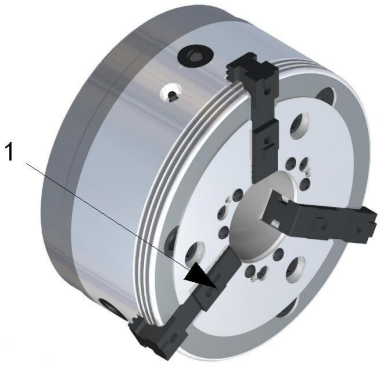



Fig. 16

4. Tighten the mounting screws with a torque wrench in a cross pattern [see section »Screw tightening torque«].
5. Assemble the guard bushing:
   remove the screws from the push-off threads, screw in the screws into the threads at the guard bushing [1] and tighten them firmly.

### 6.2.6 Position of the master jaws

Special tools required:

- chuck wrench

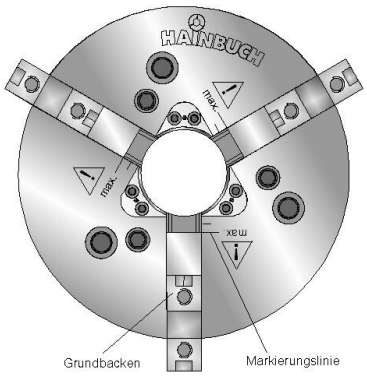



Fig. 17

The jaws may only be loosened in release position.

- On the face side of the clamping device there's a marking line milled in between the jaw guides. These marking line is for positioning of the master and/or block jaw.
- The maximum outer position and/or block jaw position is reached when in the position for changing the jaws (clamping device open) the front side of the master jaw and/or the full block jaw fits to the marking line.

This jaw position has to be strictly adhered to, so that the transfer of the force from the wedge rod to the master / block jaws all sprockets are in contact.

## 6.2.7 Changing the jaws

Special tools required:

- chuck wrench

The changing of the jaws only takes place with opened clamping device.

For safety reasons in this position the master jaws are still engaged. Falling out of the jaws is prevented.

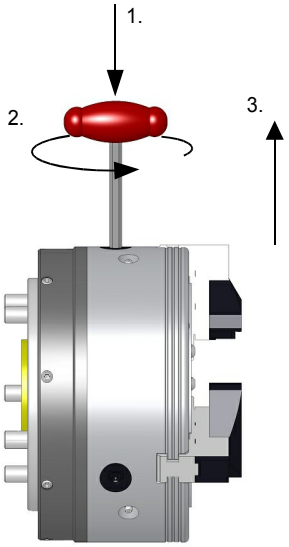



Fig. 18

1. Put the chuck wrench into the hexagonal of the respective jaw.
2. Turn the chuck wrench 90° clockwise. Now the respective jaw is released and can be removed.

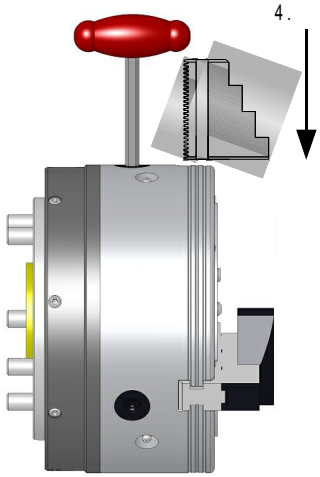



Fig. 19

For safety reasons in this position the wrench may not be removed!

3. Pull the jaw outwardly out of the groove.
4. Put in the desired jaw. Pull the jaw to the desired diameter.
5. Turn the chuck wrench 90° clockwise. The toothing of the jaw chuck must now engage in the toothing of the jaw.
6. Remove the chuck wrench from the clamping device.

## 6.2.8 Assembly of the top jaws

Special tools required:

- Allen wrench

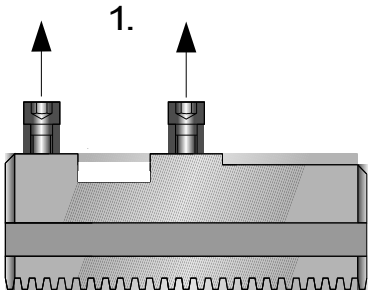



Fig. 20

1. Remove the pre-assembled screws [1] from the master jaws.

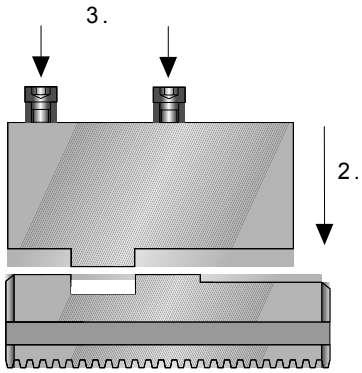



Fig. 21

2. Clean the location surface of the master and top jaws.
3. Put the top jaws with the cross offset into the groove of the master jaws [2].
4. Put the screws into the mounting holes [3].
5. Tighten the screws according to the following tightening torque table:

| Screw size | Tightening torque [Nm] |
|---|---|
| M 8 | 25 Nm |
| M10 | 60 Nm |
| M12 | 80 Nm |
| M16 | 100 Nm |
| M24 | 230 Nm |

**CAUTION!**

**Material damage by too high tightening torque!**

The given tightening torque in the table above may not be exceeded!

- Use only screws DIN 912 of the property class 12.9!

Higher tightening torques will cause deformation of the master jaw – thus the master jaw will stuck in the guides of the clamping device.

### 6.2.9 Machining the jaws

**NOTICE!**

**Material damage due to lack of accuracy.**

Jaws for highest repeatability must be machined and/or grinded in the clamping device under clamping pressure.

When machining or grinding it is important to ensure that the loading ring and loading plugs are clamped by the top jaws, not by the master jaws.

- Keep the master and jaws for recurring work. Tighten the mounting screws for the jaws with a torque wrench.
- In no case tighten the wrench by using a tube extension or a hammer.

## 6.2.10 Preparation for adapting a clamping device

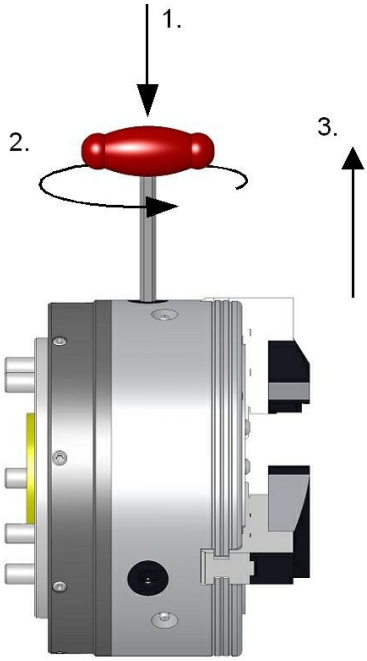



Fig. 22

Before assembling the add on clamping elements the jaws must be disassembled.

1. Put the release key into the hexagonal of the respective jaw.
2. Turn the release key 90° anti-clockwise. Now the respective jaw is released and can be removed.
3. Pull the jaw out of the groove.
4. Put in the guarding jaw at the first marking [from the outer dimension].
5. Turn the release key 90° clockwise.
6. Remove the release key from the chuck.

Repeat step 1 to 6 for the other jaws.

**CAUTIION!**

**Risk of injury!**

For assembly of the SPANNTOP chuck or the MANDO Adapt the machine may not be in clamping position.

- Move the chuck into release position!

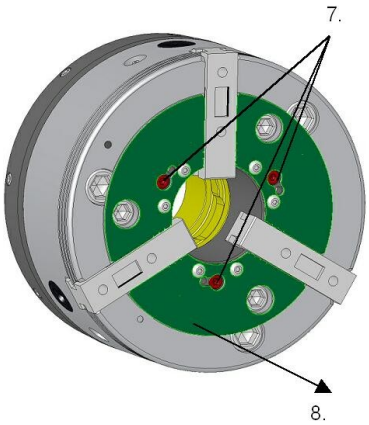



Fig. 23

Remove the chip protection:

7. Remove the 3 screws M6 (7) from the chuck.
8. Pull the chip protection out of the front of the chuck (8) – it is easier to move the draw tube carefully into clamping position and then in release position. The chip protection will be ejected from the chuck.

**NOTICE!**

Dirt, scratches and damage of the bearing surfaces affect the radial and axial running of the clamping device and the machined work pieces.

- Clean all surfaces of the jaw chuck and the add on clamping elements very thoroughly before assembly

9. Move the draw tube into front end position [release position].

The chuck is ready for the assembly of the add on clamping element.

## 6.2.11 Add on clamping element SPANNTOP

**NOTICE!**

The clamping head interferes for assembly and disassembly.

- Remove the assembled clamping head.

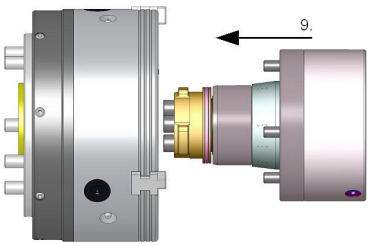



Fig. 24

1. Put the SPANNTOP clamping device into the jaw chuck with the bayonet (9). The markings at the SPANNTOP clamping device must align to the guarding jaws, the grooves on the back side of the chuck must be between the guarding jaws.

**CAUTION!**

**Crushing danger!**

Insertion of the chuck may go a little heavier, as the seals at the adaption have a certain prestress.

Crushing danger for the fingers when the frictional force of the seals have been got over.

- Hold the chuck only by the circumference.

2. Put in the chuck till end.

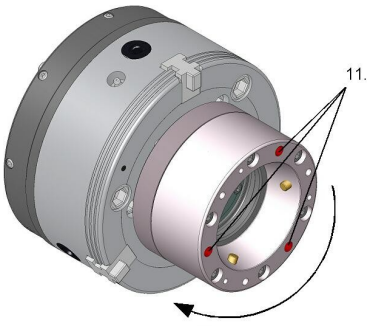



Fig. 25

3. When the SPANNTOP clamping device is fitting to the jaw chuck it can be turned 60° (10).

Not the bayonet coupling may grab. If the chuck may not be turned, rap the coupling carefully into the chuck.

**NOTICE!**

The cutout at the rear side of the SPANNTOP clamping device must align to the guarding jaws in the jaw chuck.

4. Assemble the SPANNTOP clamping device by the 3 screws M10 and tighten the screws firmly in a cross pattern. For tightening torque see the following table!

**NOTICE!**

The screws are installed in the SPANNTOP clamping device!

- Do not distinguish these screws with the screws to assemble the clamping element reception!

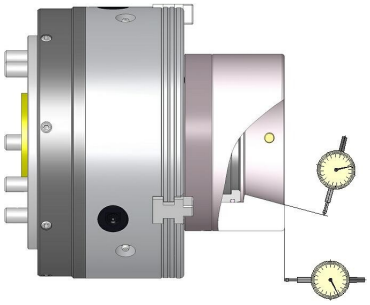


Fig. 26

Maybe the clamping element reception must be adjustet:

5. Place the magnetic base of the dial indicator on the inside of the machine.
6. Place the dial indicator for concentricity on the clamping taper and rotate the spindle carefully.
7. If the value is higher than 0.01 mm the taper may be adjusted. Stop the spindle and loosen the 6 screws M10 on the front side. Adjust the clamping element reception in such a manner that the dial indicator shows the value »0«. Re-tighten the screws M10 firmly in a cross pattern. For tightening torque see the following table.

| Diameter | Tightening torque for screws 8.8 [Nm] | Tightening torque for screws 10.9 [Nm] | Tightening torque for screws 12.9 [Nm] |
|---|---|---|---|
| M4 | 2,5 | 3,5 | 4 |
| M5 | 5 | 6 | 8 |
| M6 | 8 | 11 | 13 |
| M8 | 18 | 28 | 32 |
| M10 | 36 | 53 | 62 |
| M12 | 63 | 92 | 108 |

8. For checking the face run place a dial indicator on the surface of the SPANNTOP clamping device and turn the spindle carefully. If the face run is higher than 0.005 mm stop the spindle, disassemble the SPANNTOP clamping device and check the location surfaces for damage or contamination.

## 6.2.12 Add on clamping element segmented mandrel

**NOTICE!**

The segmented clamping bushing interferes for assembly and disassembly.

- Remove the assembled segmented clamping bushing.

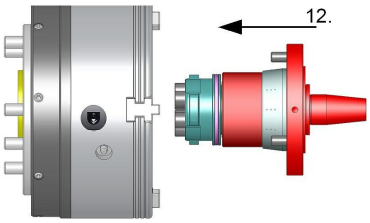



Fig. 27

1. Put the segmented mandrel in the jaw chuck. The 3 holes in the circumference must align to the guarding jaws.

**CAUTION!**

**Crushing danger!!**

Insertion of the segmented mandrel may go a little heavier, as the seals at the adaption have a certain prestress.

Crushing danger for the fingers when the frictional force of the seals have been got over.

- Hold the segmented mandrel only by the circumference.

2. Put the segmented mandrel into the chuck till end [12].

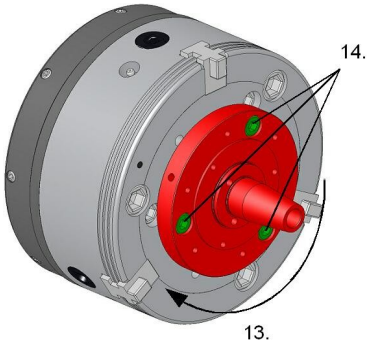



Fig. 28

3. Turn the segmented mandrel by 60° to lock the bayonet (13)
   If the segmented mandrel can not be turned, push or even knock lightly the draw bolt into the segmented mandrel.
4. Screw the segmented mandrel by the 3 screws M10 at the front (14).

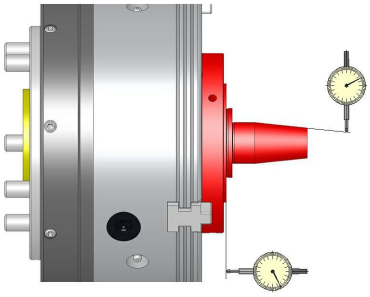


Fig. 29

Maybe the segmented mandrel must be adjusted:

5. Place the magnetic base of the dial indicator on the inside of the machine.
6. Place the dial indicator for concentricity on the clamping taper and rotate the spindle carefully.
7. To check the concentricity place the dial indicator to the taper.
8. To check the face run place the dial indicator at the surface for screwing the work piece end-stop.
9. If the value too high check the surfaces for damages or contamination.

| Diameter | Tightening torque for screws 8.8 [Nm] | Tightening torque for screws 10.9 [Nm] | Tightening torque for screws 12.9 [Nm] |
|---|---|---|---|
| M4 | 2,5 | 3,5 | 4 |
| M5 | 5 | 6 | 8 |
| M6 | 8 | 11 | 13 |
| M8 | 18 | 28 | 32 |
| M10 | 36 | 53 | 62 |
| M12 | 63 | 92 | 108 |

10. For tightening torque see the table above.
11. Tighten the screws.

## 6.3 Inspections

**NOTE!**

**Material damage due to damaged clamping devices!**

A damaged, incomplete, or unbalanced clamping device can significantly damage or even destroy the machine tool and the work piece.

- Only install undamaged, complete, and precisely balanced clamping devices.
- If in doubt contact the manufacturer.

Ensure the following points prior to each installation and start-up of the clamping device:

- All allen screws of the clamping device must be present and tightened with the proper tightening torque.
- The balance screws of the clamping device must all be present and undamaged.
- All rubber segments must be intact; this means that they are neither torn, nor are they porous at any point.
- All edges and bearing surfaces are intact; this means that they are neither broken nor do they show any signs of wear.
- The set speed of the machine tool should not exceed the maximum permissible speed of the clamping device.
- The maximum drawtube force specified on the perimeter of the clamping device must not be exceeded.
- The clamping pressure of the machine must be sufficiently high.
- All mounting tools must be removed from the interior of the machine.
- Clamping device and work piece must be compatible.
- The work piece must be clamped into the clamping device with sufficient work piece tension.

## 6.4 Activities after production is concluded

1. Move the clamping device into unclamped position.
2. Switch off the machine tool and safeguard it from being switched on again.
3. Open the protective door or hood.
4. Clean the clamping device of chips and production residues with a soft, lint-free cloth.
5. Close the protective door or hood.

# 7 Disassembly, subsequent storage, disposal

If there is break in production that lasts longer than 3 days, or if the machine will be changed ver for other work pieces, the clamping device must be disassembled and properly stored in accordance with the manufacturer's specifications [see section »Transport, packaging, storage«].

Prior to disassembling:

- Put the machine in set up mode.
- Remove fuels and auxiliary materials, as well as residual processing materials and dispose of these items in an environmentally-responsible manner.

## 7.1 Safety

**Safeguarding against restart**

**DANGER!**

**Life-threatening danger if restarted without authorization**

When disassembling there is danger of the energy supply being switched on inadvertently. This poses a life-threatening hazard for persons in the danger zone.

- Prior to starting the tasks switch off all energy supplies and safeguard them from being switched on again.

## 7.2 Disassembling the clamping device

### 7.2.1 Disassembling the jaw chuck

Two people are required for this task!

Special tools required:

- Allen wrench
- Crane
- Eye bolts

1. Put the machine tool in set up mode.
2. Remove all tools from the interior of the machine.
3. Set the clamping pressure of the machine tool on the lowest setting.
4. Move the drawtube of the machine tool into the front stop position.
5. Loosen, unscrew and remove the allen screws.
6. Unscrew the jaw chuck from the flange by using a crane.
7. Remove the jaw chuck out of the machine.

### 7.2.2 Disassembling the flange

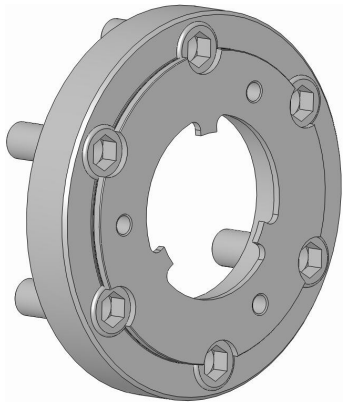


Fig. 30

1. Put the machine tool in set up mode.
2. Loosen, unscrew and remove the allen screws.
3. Remove the flange by hand from the machine spindle.
4. Wipe off the mating surfaces at the machine spindle with a soft, lint-free cloth and remove all oil and grease residues.

### 7.2.3 Disassemble the bayonet adapter

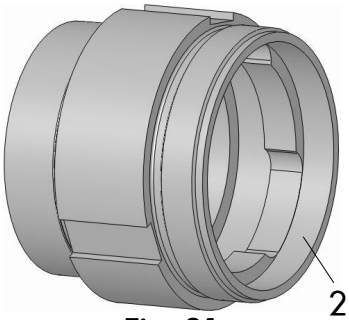


Fig. 31

1. Put the machine in set up mode.
2. Unscrew the bayonet adapter [2] from the draw tube adapter by hand.
3. Wipe off the bayonet adapter with a soft, lint-free cloth and remove all oil and grease residues.

### 7.2.4 Disassemble the draw tube adapter [optional]

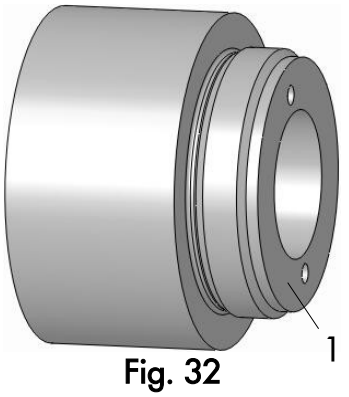


Fig. 32

1. Put the machine in set up mode.
2. Unscrew the draw tube adapter [1] from the draw tube.
3. Wipe off the draw tube adapter with a soft, lint-free cloth and remove all oil and grease residues.

## 7.3 Subsequent storage of the clamping device

The clamping device must be cleaned and treated with corrosion protection for subsequent storage [see section »Cleaning«].

**NOTE!**

The storage conditions are specified in the section »Transport, packaging and storage«.

## 7.4 Disposal

If a return or disposal agreement has not been concluded, then recycle disassembled components.

**NOTE!**

**Improper disposal causes environmental damage!**

Lubricants and other auxiliary materials are subject to treatment as special waste, and should only be disposed of by approved specialist companies!

Local municipal authorities or specialized disposal companies provide information on environmentally-responsible disposal.

# 8 Maintenance

**Environmental protection**

Comply with the following instructions for environmental protection when performing maintenance work:

- At all lubricating points where lubricant is applied by hand, remove escaping, used, or excess grease, and dispose of it in accordance with applicable local regulations.
- Collect used oil in suitable containers and dispose of it in accordance with applicable local regulations.

## 8.1 Cleaning

**NOTE!**

**Material damage if cleaned with compressed air!**

Cleaning the clamping device with compressed air can force metal chips into thread and grooves. This can damage or even destroy the clamping device.

- Never clean the clamping device with compressed air!

- Auxiliary material required:
  - Ester-free, non-polar cleaning agent
  - Soft, lint-free cloth

1. Disassemble the clamping device [see section »Disassembling the clamping device«].
2. Clean all components listed below with cleaning agent and a cloth; remove all oil and grease residues:
   - Flange
   - Jaw guide
   - Work piece end-stop [optional]
   - Allen screws

## 8.2 Preservation

- Special tools required:
  - Universal grease 2085/0003
  - Grease gun
  - Oil stone
  - Soft, lint-free cloth

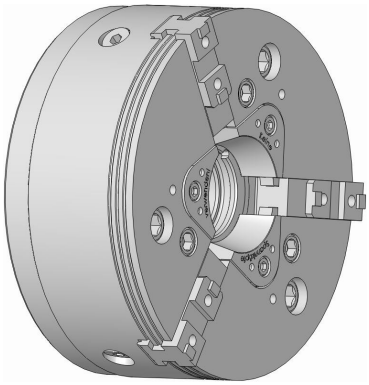


Fig. 33

1. Disassemble the clamping device [see section »Disassembling the clamping device«].
2. Hone all the bearing surfaces of the clamping device with an oil stone.
3. Lightly grease all allen screws. Remove excess grease with a cloth.
4. Remount the clamping device.
5. Screw all allen screws into the clamping device again and tighten them finger-tight.

   ! For subsequent storage tightening the allen screws finger-tight suffices. This facilitates re-commissioning and protect the allen screws.

6. Lightly grease all interior and outer surfaces of the clamping device. Remove excess grease with a cloth.
7. Pack the clamping device airtight in foil. Place it on a level, impact-free storage location and safeguard it from falling.

## 8.3 Maintenance schedule

Maintenance tasks are described in the sections below that are required for optimal and trouble-free operation.

If increased wear is detected during regular inspections, then reduce the required maintenance intervals according to the actual indications of wear.

Contact the manufacturer, [see the service address on the back] if you have questions concerning maintenance tasks and intervals.

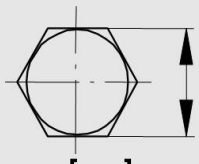
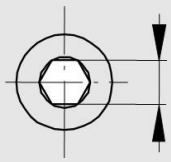
| Interval | Maintenance task |
|---|---|
| After each 8 hours | With high load and with use of coolant:<br>■ Grease the clamping device<br>■ For heavy pollution complete cleaning [see »Cleaning«]. |
| After each 20 hours | With normal load and with use of coolant:<br>■ Grease the clamping device<br>■ For heavy pollution complete cleaning [see »Cleaning«]. |
| After 1000–1500 hours | Completely disassemble and clean the clamping device [see section »Cleaning«]. |

## 8.4 Bolt torque

**Metric ISO thread**

The guide values for bolt tightening torque for achieving the highest permissible pre-tension for metric ISO thread are specified in Nm in the table.

- Total friction coefficient $\mu_{tot}$ = 0,12
- 90% utilization of the apparent limit of elasticity

| Diameter |  [mm] |  [mm] | Torque for screw quality 10.9 [Nm] |
|---|---|---|---|
| M 4 | 7 | 3 | 4 |
| M 5 | 8 | 4 | 6,5 |
| M 6 | 10 | 5 | 11,5 |
| M 8 | 13 | 6 | 24,5 |
| M 10 | 17 | 8 | 47,6 |
| M 12 | 19 | 10 | 91,1 |
| M 16 | 24 | 14 | 210 |
| M 20 | 30 | 17 | 360 |
| M 24 | 36 | 19 | 420 |

The table shows the maximum permissible values and does not include any other safety factors. Knowledge of the applicable guidelines and configuration criteria are the prerequisites.

# 9 Trouble shooting

Possible fault causes and the tasks to correct these faults are described in the following section.

If faults occur more frequently, the maintenance intervals must be shortened to correspond to the actual system load.

Contact the manufacturer if there are faults that cannot be corrected by following the instructions below; see the service address on the back of this operating instruction.

## 9.1 Safety

**Trouble shooting**

The following always applies:

1. For faults that pose a direct danger for personnel and or property immediately execute the emergency-stop function.
2. Determine the cause of the fault.
3. If correction of the fault requires work in the danger zone, put the machine in set-up mode.
4. Immediately inform the responsible parties at the installation site of the fault.
5. Depending on the type of fault, either have authorized specialized personnel correct the fault, or correct it yourself.

   The trouble shooting table provided below lists personnel who are authorized to correct the fault.

6. If there is a fault that was not caused by the clamping device the cause of the fault may be in the machine area. See the operating manual for the machine in this regard.

## 9.2 Trouble shooting table

| Fault | Possible cause | Fault correction | Corrected by |
|---|---|---|---|
| Clamping force is too low | The chuck was not lubricated properly. | Lubricate the clamping device with HAINBUCH fat according to maintenance schedule. | Specialist |
| | Work piece is under-dimensioned | Move the master jaw by 1 step. | Specialist |
| Chips penetrate into the chuck. | When lathing with jaws, the guard bushing was not used. | Use the guard bushing | Specialist |
| Jaws may not be changed. | The clamping device is not in release position. | Move the clamping device into release positon. | Specialist |
| Eccentric dimensional deviation on the work piece | Concentricity error of the segmented mandrel | Check the concentricity at the taper of the segmented mandrel, correct if necessary [see section »Checking and adjusting the face run and the concentricity«]. | Specialist |
| Dimensional deviation on the work piece | Contaminated guide | Disassemble the master jaws and clean the guide [see section »Cleaning«]. | Specialist |
| Formal defect on the work piece | Elastic deformation of feedstock that is subject to formal defects. After machining the workpiece returns to its original form. | Use feedstock with fewer formal defects.<br>If technically justifiably reduce the clamping pressure. | Specialist |

| Fault | Possible cause | Fault correction | Corrected by |
|---|---|---|---|
| Marks on the clamping surface | Point or linear work piece clamping | Bore or grind the jaws. | Specialist |

## 9.3 Start-up after corrected fault

After correcting the fault execute the following steps to start up again:

1. Reset the emergency-stop device
2. Acknowledge the fault on the machine tool controller
3. Ensure that no one is in the danger zone
4. Start the machine tool

# 10 Appendix

## 10.1 Service Hotline

### Order Hotline

Quickly ordered and delivered. A call is all it takes:
+49 [0]7144. 907-333

### Schedule Hotline

Current status of your order? Just call:
+49 [0]7144. 907-222

### 24h emergency call

Has there been a crash or other technical emergency?
Our experts are at your service around the clock:
+49 [0]7144. 907-444

## 10.2 Representatives in Germany and Europe

The sales partners and service employees listed below are available for further consultation or support.

Overview of German postal codes:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| G | 01 – 02 | B | 29 – 31 | D | 56 | H | 80 – 87 |
| J | 03 | A | 32 – 33 | K | 57 - 59 | E | 88 – 89 |
| G | 04 | B | 34 | M | 60 – 65 | P | 90 - 92 |
| G | 06 – 07 | M | 35 – 36 | F | 66 – 69 | Q | 93 - 94 |
| G | 08 – 09 | B | 37 – 39 | N | 70 – 71 | R | 95 - 96 |
| J | 10 – 13 | C | 40 – 47 | E | 72 | M | 97 |
| L | 14 | A | 48 – 49 | O | 73 | | |
| J | 15 – 18 | D | 50 – 54 | N | 74 | | |
| I | | M | 55 | F | 75 – 79 | | |

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